

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior versions and listings of claims in the application.

Listing of Claims:

1. (Previously Presented) Electrochemical battery cell having a negative electrode, an electrolyte containing a conductive salt, and a positive electrode,
wherein
the electrolyte is based on SO₂,
an intermediate space between the positive electrode and the negative electrode is arranged and adapted such that active mass deposited on the negative electrode during the charging of the cell may come into contact with the positive electrode in such way that locally limited short-circuit reactions occur at its surface, and
a porous insulator layer runs adjacent and parallel to the positive electrode, which is arranged and formed such that it is possible for active mass deposited on the negative electrode to grow during the charging of the cell through the pores of the insulator layer to the surface of the positive electrode.

2. (Canceled)

3. (Previously Presented) Battery cell according to Claim 1, wherein the negative electrode is adapted for taking up positive metal ions of the conductive salt into its interior during charging of the cell.
4. (Original) Battery cell according to Claim 3, wherein the negative electrode comprises an electrically conductive electrode mass into which the metal ions of the conductive salt are taken up during charging of the cell and the porous insulator layer is located between the electrically conductive electrode mass of the negative electrode and the positive electrode.
5. (Original) Battery cell according to Claim 4, wherein the electrically conductive electrode mass of the negative electrode contains carbon.
6. (Previously Presented) Battery cell according to Claim 1, wherein the negative electrode has a planar, electronically conductive substrate and a nonconductive deposition layer bonded to the substrate, the deposition layer being formed and arranged such that active mass deposited on the surface of the substrate penetrates into its pores and is deposited further therein and no barrier layer impermeable to the active mass is located between the deposition layer and the positive electrode, the porous insulator layer being formed by the deposition layer or being a separate layer.
7. (Previously Presented) Battery cell according to Claim 1, wherein the porous insulator layer contains a particle-shaped, fiber-shaped or tube-shaped pore structure material.

8. (Original) Battery cell according to Claim 7, wherein the pore structure material contains an oxide, a carbide, or a chemically stable silicate.

9. (Previously Presented) Battery cell according to Claim 1, wherein the porous insulator layer contains a binder based on a terpolymer of tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride.

10-18. (Canceled)

19. (Currently Amended) Electrochemical battery cell having a negative electrode, an electrolyte containing a conductive salt, and a positive electrode, the electrolyte being based on SO₂, ~~the cell further containing an electrode having~~ wherein at least one of the positive and negative electrodes is an insertion electrode that contains active metal in its interior in such a manner that the active metal is ready for ion exchange with the electrolyte during charging or discharging of the cell and has an electrode surface which is essentially free of hydroxide ions.

20-29. (Canceled)

30. (Previously Presented) Battery cell according to Claim 1, wherein an active metal is selected from the group comprising the alkali metals, the alkaline earth metals, and the metals of the second secondary group of the periodic system.

31. (Previously Presented) Battery cell according to Claim 30, characterized in that active metal is lithium, sodium, calcium, zinc, or aluminum.

32. (Previously Presented) Battery cell according to Claim 1, wherein the positive electrode contains a metal oxide.

33. (Currently Amended) Battery cell according to Claim [[32]] 1, wherein the positive electrode contains an intercalation compound.

34. (Previously Presented) Battery cell according to Claim 33, wherein the positive electrode contains an intercalation compound comprising CoO₂.

35-36. (Canceled)

37. (Previously Presented) Electrochemical battery cell according to claim 19, wherein the electrode is essentially free of H⁺ ions.

38. (Canceled)

39. (Currently Amended) Electrochemical battery cell according to claim [[38]] 19, wherein the insertion electrode is an intercalation electrode.

40. (Currently Amended) Electrochemical battery cell according to claim 19, wherein the insertion electrode is the negative electrode and is adapted for taking up positive metal ions of a conductive salt into its interior during charging of the cell.

41. (Previously Presented) Electrochemical battery cell according to claim 40, wherein the electrode comprises an electrically conductive electrode mass into which the metal ions of the conductive salt are taken up during charging of the cell.

42. (Previously Presented) Electrochemical battery cell according to claim 41, wherein the electrically conductive electrode mass of the electrode contains carbon.

43. (Previously Presented) Electrochemical battery cell according to claim 19, wherein the conductive salt of the electrolyte is a tetrahalogenated aluminate of an alkali metal.

44. (Previously Presented) Electrochemical battery cell according to claim 19, wherein the electrode is the positive electrode of the cell.

45. (Previously Presented) Electrochemical battery cell according to claim 19, wherein the electrode contains at most 5000 ppm of chemically bonded water.

46. (Previously Presented) Electrochemical battery cell according to claim 19, wherein the electrode has a planar, electronically conductive substrate and a nonconductive porous deposition layer bonded to the substrate, the deposition layer being formed and arranged such that an active mass deposited on a surface of the substrate penetrates into and is deposited in its pores.

47. (Previously Presented) Battery cell according to claim 1, wherein the porous insulator layer is configured such that, during charging of the cell, active mass deposited on the negative electrode can grow through the pores of the insulator layer to the surface of the positive electrode.

48. (Previously Presented) Battery cell according to claim 1, wherein the porous insulator layer is configured to permit the growth of active metal therethrough.

49. (Canceled)

50. (New) Battery cell according to claim 1, wherein no barrier layer impermeable to the active mass is located between the negative electrode and the positive electrode.

51. (New) An electrochemical battery cell comprising:
a negative electrode;
an electrolyte containing a conductive salt, wherein the electrolyte is based on SO₂;
a positive electrode; and

a porous insulator layer located between the positive electrode and the negative electrode, running adjacent and parallel to the positive electrode,

wherein:

the battery cell is configured such that active metal deposited on the negative electrode during the charging of the cell may come into contact with the positive electrode in such way that short-circuit reactions occur at its surface, and

the porous insulator layer is configured such that it is possible for active metal deposited on the negative electrode to grow during the charging of the cell through the pores of the insulator layer to the surface of the positive electrode, and that any short circuits occurring as a result of the contact of active metal with the positive electrode are locally limited.

52. (New) The battery cell according to claim 51, wherein the battery cell does not contain a barrier layer that is impermeable to the active metal and located between the negative electrode and the positive electrode.

53. (New) Battery cell according to claim 51, wherein the negative electrode is adapted for taking up positive metal ions of the conductive salt into its interior during charging of the cell.

54. (New) Battery cell according to claim 53, wherein the negative electrode comprises an electrically conductive electrode mass into which the metal ions of the conductive salt are taken up during charging of the cell and the porous insulator layer is located between the electrically conductive electrode mass of the negative electrode and the positive electrode.

55. (New) Battery cell according to claim 54, wherein the electrically conductive electrode mass of the negative electrode contains carbon.

56. (New) Battery cell according to claim 51, wherein the negative electrode has a planar, electronically conductive substrate and a nonconductive deposition layer bonded to the substrate, the deposition layer being formed and arranged such that active metal deposited on the surface of the substrate penetrates into its pores and is deposited further therein and no barrier layer impermeable to the active metal is located between the deposition layer and the positive electrode, the porous insulator layer being formed by the deposition layer or being a separate layer.

57. (New) Battery cell according to claim 51, wherein the porous insulator layer contains a particle-shaped, fiber-shaped or tube-shaped pore structure material.

58. (New) Battery cell according to claim 57, wherein the pore structure material contains an oxide, a carbide, or a chemically stable silicate.

59. (New) Battery cell according to claim 51, wherein the porous insulator layer contains a binder based on a terpolymer of tetrafluoroethylene, hexafluoropropylene, and vinylidene fluoride.

60. (New) Battery cell according to claim 51, wherein an active metal is selected from the group comprising the alkali metals, the alkaline earth metals, and the metals of the second secondary group of the periodic system.

61. (New) Battery cell according to claim 60, characterized in that active metal is lithium, sodium, calcium, zinc, or aluminum.

62. (New) Battery cell according to claim 51, wherein the positive electrode contains a metal oxide.

63. (New) Battery cell according to claim 51, wherein the positive electrode contains an intercalation compound.

64. (New) Battery cell according to claim 63, wherein the positive electrode contains an intercalation compound comprising CoO_2 .

65. (New) Battery cell according to claim 51, wherein the porous insulator layer is configured to permit the growth of active metal therethrough.